The CREST Project: Consolidated reporting of earthquakes and tsunamis

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Abstract. In 1997 the U.S. Geological Survey, National Oceanographic and Atmospheric Administration, and the five western states joined in a partnership to enhance the quality and quantity of seismic data provided to the NOAA tsunami warning centers in Alaska and Hawaii. The project, named the Consolidated Reporting of Earthquakes and Tsunamis (CREST), now provides the warning centers with real-time seismic data over dedicated communication links and the Internet from regional seismic networks monitoring earthquakes in the five western states, the U.S. National Seismic Network in Colorado, and from domestic and global seismic stations operated by other agencies. The goal of the project is to reduce the time needed to issue a tsunami warning by providing the warning centers with high-dynamic range, broadband waveforms in near real-time. An additional goal is to reduce the likelihood of issuing false tsunami warnings by rapidly providing to the warning centers parametric information on earthquakes that could indicate their tsunamigenic potential, such as hypocenters, magnitudes, moment tensors, and shake distribution maps. At the end of the 5-year project new or upgraded field instrumentation will be installed at about 56 seismic stations in the five western states. Data from these instruments has been integrated into the CREST network utilizing Earthworm software. The CREST system has significantly reduced the time needed to respond to teleseismic earthquakes. Notably, the West Coast/Alaska Tsunami Warning Center responded to the 28 February 2001 M_w 6.8 Nisqually earthquake beneath Olympia, Washington within 2 min, compared to an average response time of over 10 min for the previous 18 years.

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